Givaudan-Roure Corporation

FACILITY ADDRESS:

The Givaudan Roure Company/Givaudan Chemical Company (hereinafter "Givaudan") facility is located at 125 Delawanna Avenue in Clifton, Passaic County, New Jersey ("the Site").

DATES OF OPERATION:

Givaudan operated at the Site from approximately 1905 through 1998.

DIOXIN-RELATED OPERATIONS:

Of note, between 1947 and 1984, Givaudan produced the antibacterial chemical Hexachlorophene (under the "Isobac 20" product name) at the Site.

The historical manufacturing of Hexachlorophene/Isobac 20 and other products at the Givaudan Clifton facility was known to utilize hazardous substances associated with the formation of dioxin. These dioxin associated compounds include the following:

- USEPA Class I organic compound 2,4,5-Trichlorophenol (2,4,5-TCP) which was produced on-site from 1947 through 1949, and which was utilized as a raw material feedstock in the on-site manufacture of Hexachlorophene from 1947 through 1984.
- USEPA Class I organic compound 2,4-Dichlorophenol which was also utilized as a raw material at the Site.
- USEPA Class III organic compounds Benzaldehyde and Fumaric acid.

SITE CHARACTERIZATION:

Dioxins:

Levels of 2,3,7,8 TCDD soil contamination were detected at concentrations ranging up to 200 ppb in the former process/production area, outside of Building # 54. This sampling location is situated above the chemical sewer line. Elevated concentrations of 2,3,7,8 TCDD were also found in areas of the eastern portion of the Site, including immediately adjacent to the storm water retention pond.

2,3,7,8 TCDD was found at concentrations up to 18.79 ppb (estimated) under various site buildings, (Building #'s 93, 95, 168 & 60), with concentrations of 2,3,7,8 TCDD exceeding 2 ppb being detected in samples from as deep as 23- to 24-feet below ground surface.

The former drum storage area was located in the southeastern portion of the Site, near Building #93, which showed 2,3,7,8 TCDD levels in excess of 7 ppb. This area was adjacent to the storm water retention pond.

On-site Sediments:

Site sediment sampling (storm water retention pond) has served to identify the following contamination:

- 2,4,5-Trichlorophenol @ 890,000 ppb
- 2,4- Dichlorophenol @ 230,000 ppb
- 2,3,7,8-TCDD @ 214 ppb

DISCHARGE ROUTES / NEXUS TO LPRSA:

Several discharge routes existed to the LPRSA from the Givaudan Site:

- Employee statements indicate that the chemical sewer was plumbed to the Yantacaw Pond, which drained to the Third River and ultimately, the Passaic River. This resulted in direct process discharges via the facility's chemical sewer system.

- Breaks in the sanitary sewer line running under the River Road bridge in 1953, 1971, and 1978 caused wastewater to discharge directly to the Third River and ultimately, the Passaic River. These breaks were attributed to Givaudan's discharging of highly acidic wastewaters to the sanitary sewer, thereby corroding the line where it crossed the Third River.

- Stormwater was managed on Site by a series of catch basins and onsite storm sewers that discharged to an on-Site stormwater retention pond (the "Pond"). Stormwater overflow from the Pond area flowed through a series of swales and pipes along the eastern portion of the Site southward to a catch basin that discharged through a 16-inch pipe to the City of Clifton storm sewer in River Road. Stormwater also sheet flowed across the Site to the Pond, a gully adjacent to the railroad tracks on the southwest portion of the Site, and the gutter of River Road. The stormwater discharged directly to the Passaic River via the city's storm sewer. A 1984 Givaudan drawing showed stormwater discharging at River Road to the Passaic River via New Jersey Department of Transportation sewers.

OFF-SITE SEDIMENTS CHARACTERIZATION:

The characterization of sediments in the Third River and adjoining Passaic River have been conducted, however, dioxin sampling for the Third River and Yantacaw Pond is limited.

Several sampling locations in the Passaic River are relevant to this investigation:

- Core G12 (HRC-29A) was collected approximately 1,000 feet downstream and across the Passaic River from the discharge point of the Third River to the Passaic River. This was a high resolution core sampled to a maximum depth of 8.2 feet.

- Core LRC-08A-067 was collected from approximately 1,300 feet downstream and across the Passaic River from the discharge point of the Third River to the Passaic River. This was a low resolution core sampled to a maximum depth of 6.9 feet.

- Core G-165 (EMBM-LR17) was collected from approximately 500 feet upstream from the discharge point of the Third River to the Passaic River. This was a shallow core sampled to a maximum depth of 1.75 feet.

- Core G-162 (EMBM-LR14) was collected from approximately 1,300 feet downstream and across the Passaic River from the discharge point of the Third River to the Passaic River. This was a shallow core sampled to a maximum depth of 2.75 feet.

Dioxins:

The following dioxin data exists for these Passaic River Sediment Cores:.

- Core G12 (HRC-29A): 2,3,7,8–TCDD was reported at concentrations ranging to 21.7 ppb. Concentrations ranged from 5.3 to 21.7 ppb over numerous samples representing the middle to bottom section of this core. Concentrations ranged below 1 ppb in the upper third of this core, with a peak of 1.19 ppb at the second shallowest interval of the core.

- Core LRC-08A-067: 2,3,7,8–TCDD was reported at concentrations ranging to 30.3 ppb.

- Core G-165 (EMBM-LR17): 2,3,7,8–TCDD was reported at concentrations ranging to 10.7 ppb.

- Core G-162 (EMBM-LR14): 2,3,7,8–TCDD was reported at concentrations ranging to 10.7 ppb.

CONCLUSIONS – FOLLOWUP:

- Site-related hazardous substances have been documented in the on-site soils and sediments, as well as off-site sediments in the Third and Passaic Rivers. Sampling locations in the Third River and Passaic River may not been maximized relative to discharge mechanisms from this site. It is recommended that sediments of the former Third River pond, in the area of the alleged former discharge point of the chemical process sewer, be sampled to confirm the historic and/or ongoing discharge of dioxins from the Site.

- Additionally, requests of Givaudan are recommended to provide copies of any sampling conducted for dioxins and related contaminants of concern that have not been provided to USEPA, including effluent discharges and disposition of wastes. Of particular interest are testing of effluent and disposition records for hexachlorophene wastes prior to those dates (1978) provided in Givaudan's 104(e) response.

- Also, a request for former plant documents and drawings showing on-site and off-site sewer lines and connections of the former plant chemical sewer lines to discharge points is recommended. Givaudan provided a limited number of documents in their 104(e) responses, and other drawings of interest are listed on those documents. For instance, the following are of interest:

Drawing No.	Date	Title
SK-1761	1984	Future Plant Showing Proposed Storm Sewer System
SK-1762	1984	Proposed Chemical Sewer System
SK-1763	1984	Future Plant Showing Proposed Chemical Sewer System

- Also, Givaudan should provide documentation of their maintenance and repair of off-site sewers and effluent discharge monitoring as identified in public records. Givaudan records reflecting known public records and events have not been provided in the 104(e)

responses; inquiry should identify any such records located at other Givaudan facilities or corporate offices, etc. not fully searched under prior requests. Such search should entail accounts of former employees.

- Also, Givaudan should provide documentation regarding any operations or affiliate operations in Essex, Union, Hudson or Bergen Counties utilizing substances such as hexachlorophene or others associated with the formation of dioxin.